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Shared Automated Parcel Machine  
and Delivery System

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DISCLOSURE TEXT:

Automated Parcel Machine and Delivery  
System

Disclosed is a computerized, secure,  
shared Automated Parcel

Machine Delivery System (APMDS) for  
unattended retrieval of Internet

and mail ordered parcels. Traditionally,  
consumers have relied on

several methods for retrieving mail  
ordered goods. The most common

way is to have the parcel delivered  
straight to a residential or

business doorstep. Alternately, a parcel  
can be held at a centralized

facility and retrieved by visiting an attendant at the site.

In

certain circumstances, the parcel can be retrieved without an

attendant, but only if the customer has either rented a dedicated

secure box of sufficient size at a centralized facility such as the

United States Postal Service (USPS), or the customer's neighborhood

is equipped with a central USPS mailbox containing a sufficiently

large, shared secure box. As the purchase of products via the

Internet increases, the distribution model of goods will change. In

order to facilitate the change, a centralized, automated, shared,

secure method of retrieving mail ordered parcels is needed. The

computerized APMDS provides such a mechanism.

#### APM Design Description

The following table lists the major functions and associated acronyms

used in describing the design of the APMDS.

#### Function or Term Description

APM Automated Parcel Machine.

APMDS Automated Parcel Machine Delivery System. The APMDS is the

entire concept involved with shipping goods to an APM.

APMID Automated Parcel Machine Identification. Each APM site has a unique APMID.

APMSL Automated Parcel Machine Sticky Label. APMSLs are placed on every parcel that uses the APMS. The key to the APMSL is a two-dimensional bar code that encodes the APMID, postage, and buyer, seller, and shipper information.

LAPMCC Local Automated Parcel Machine Control Computer.

All automated functions at each APM site are control by the LAPMCC

RMT Rotating Mechanical Turntable. RMTs have divided partitions for holding parcels. All APMs have at least one RMT. The style and quantity of RMTs are dictated by frequency of use and are ordered as options when the APM site is established, or when it is upgraded.

MDSS Mechanical Drive Subsystem. The MDSS controls the rotation of the RMT as directed by the LAPMCC.

CISS Customer Interface Subsystem (CISS). The CISS allows for customer input to the APM's LAPMCC

ASSS Automatic Scanning Subsystem. The ASSS connects to the LAPMCC and is able to read two-dimensional bar codes.

CADSS Customer Access Door Subsystem. The CADSS provides the customer access to the APM to retrieve

his parcel. The CADSS is designed in such a way to prevent theft, injury, and sabotage.

PESS Parcel Ejector Subsystem. The PESS ejects parcels from the RMT into the CADSS.

CAPMCS Central Automated Parcel Machine Computer System. The

CAPMCS manages all data aspects of the APMDS. All LAPMCCs connect to the CAPMCS.

APMBEP Automated Parcel Machine Business Equipment Package. The

APMBEP includes a sticky label printer and the associated application software to generate APM sticky labels.

Figure 1 shows the basic block diagram of the APMDS.

The CAPMCS performs the following functions:

- 1.

Communication with all APMs in its domain for the purpose of inventory tracking, determining usage fees, calculating APM vacancy, and other general maintenance.

2. Initiating phone and e-mail notifications to buyers.

3. Maintenance of a database of parcel information that can be made selectively and readily available for publication via the worldwide web.

Figure 2 shows a typical APM site configuration. Each APM can be configured with multiple options

including multiple RMT and/or RMT styles. The CISS includes a presence sensor, security camera, display, keypad, Magnetic Stripe Reader (MSR), and optionally, a smart card reader allowing for automated and secure customer retrieval of parcels.

The ASSS is mounted stationary above the customer access door. The PESS is positioned in such a way that parcels can be ejected from the RMT into the CADSS.

The LAPMCC Controls all APM subsystems including the MDSS, CISS, ASSS, CADSS. It also has a dedicated secure communication link to the CAPMCS.

Figure 3 shows an example of the APM front.

#### APMDS Usage

Each APM is issued a unique APMID upon its initial installation. The concept of the APMID is similar to the current ZIP CODE system used by the USPS. In fact, in the event that the APM is located at a U.S. Post Office, the ZIP CODE can serve as the APMID since it is unique.

All APMIDs are preceded by the country code in which they reside to incorporate worldwide functionality.

When a consumer places an order from

a mail order site (via phone, internet, etc...) and wishes to use the APMDS, the seller obtains the desired APMID. If the buyer does not know the APMID, the seller can obtain the buyer's address, and locate the closest APM via the CAPMCS web-enabled database.

In order to use the APMDS, the seller must supply a valid e-mail address and/or telephone number at the time of purchase. The buyer's contact information is used to notify the buyer when the parcel arrives at the APM. This contact information is encoded in a 2D bar code and printed on a APMSL. The APMSL is placed on the outside of the box.

The seller's business uses equipment provided through the company that owns and manages the entire APMDS to print the APMSL. The software that sellers need to utilize the APMDS is part of the APMBEP. Each APMSL also includes the appropriate postage needed for the cost of shipping. Sellers are able to obtain authorization to issue postage from any shipping company by either pre-purchasing it from them, or by making account arrangements with their desired shipping company or companies. The software provided with the equipment package is able to interact

with software provided by the various shipping companies so that the issuance of postage can be automated. The name of the company who actually handles the shipping of the parcel is printed on the APMSL in human readable text.

This ensures there is an easy way for a seller who uses multiple shipping companies to easily identify the parcel's handler. The APMSL also contains the seller's information so that in the event that the buyer does not retrieve the parcel, it can be returned to the seller.

When the parcel arrives at the destination APM, it has zero postage due. The shipping company that handles the parcel has access to the stock entrance of the APM, as granted and maintained by the owner of the APMSL. The shipper places the parcel into a vacant slot on the RMT. When the shipper completes his delivery and closes the access door to the APM stocking area, the LAPMCC senses the exit (via the rear access door switch) and initiates an automatic inventory procedure.

As each parcel rotates around the RMT, its bar code is examined by the ASSS under control of the LAPMCC. Any new parcels found since the last automatic inventory

are identified. The LAPMCC then contacts the CAPMCS with a command to initiate notification to the buyer that his parcel has arrived. The CAPMCS then contacts the buyer through their desired channel - e-mail, phone, or both. The notification of the parcel's arrival at the APM also allows the CAPMCS to begin tracking the time that it takes for the buyer to retrieve it.

The buyer is given 24 hours to retrieve the parcel upon notification. After the 24-hour period has expired, the individual owner of the APM can collect additional fees at his discretion.

The addition of fees after the 24-hour period provides an incentive for the buyer to retrieve the parcel in a timely manner, thus ensuring a higher vacancy rate at the APM.

As part of notification, the buyer receives a code that is used for the unattended retrieval. When the buyer arrives at the APM, the buyer enters the code via the CISS. The LAPMCC rotates the RMT until the parcel is found. The parcel's location at this point is directly in front of the customer access door, which is locked. The LAPMCC then determines if any additional fees are due by contacting the



CAPMCS. If so, the amount is made known to the buyer via the CISS and

the buyer is able to pay the fees via a credit/debit/smart card.

Upon

zero due, the LAPMCC initiates a sequence to the PESS, which pushes

the parcel into the CADSS so that it can be removed. After 15

seconds, the LAPMCC begins a sequence to re-secure the door. The

CADSS has the ability to sense presence and pressure (as an elevator

door does) and continues with the door closing sequence until the

door is re-secured. The RMT is locked at all times when the customer

access door is unsecured.

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